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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,323	08/23/2006	Eiichi Fukasawa	1150-46533X00	8115
20457 7590 04/07/2009 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873				
EXAMINER				
SEIFU, LESSANEWORK T				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/590,323

## Applicant(s)

FUKASAWA ET AL.

## Examiner

Lessanework Seifu

## Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-10, 12, 18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-10, 12, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-083)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 2, 8, 9, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (JP 11-190591) in view of Nobuhara et al. (JP 01-282148).

Regarding claims 1, 2, 9, 18, and 19 Uchida discloses an apparatus comprising: a furnace (11) and a distributor (12, 13, 14) which is arranged at the bottom of the furnace, and wherein the distributor comprises a perforated plate (12) and a bed packed by ceramic particles (14), (see Fig. 1 and Machine translation, parags. [0005] to [0007]). Uchida, however, fails to disclose the specific purity, kind, and porosity of the ceramic material used. Nobuhara et al. disclose a fused silica material comprising  $\geq 99.0\%$   $\text{SiO}_2$ , which encompasses the recited purity of 99.5%, and a porosity of  $\leq 5\%$ , which also encompasses the recited porosity of 0.1% for use as a refractory material in a chlorination furnace (see Abstract). The fused silica material of Nobuhara et al. and the claimed fused silica particles have comparable properties with respect to both purity and porosity. Thus, one of ordinary skill in the art would recognize that the fused silica material of Nobuhara et al. and the claimed fused silica particles would also characteristically possess similar bulk density. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the ceramic material disclosed in Nobuhara et al. as the ceramic particles in the apparatus of Uchida because, Nobuhara et al. teach that the ceramic material made in accordance to their invention minimizes the impurities present in the ceramic material that are capable of reacting with gaseous chlorine (see Abstract).

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to similarly utilize silicon nitride having purity in the range as

disclosed in the reference Nobuhara et al. as the ceramic material of Uchida for the same intended purpose of minimizing the impurities present in the ceramic material that may reacting with gaseous chlorine.

Regarding claim 8, the claim depends from claim 1 such that the reasoning applied to claim 1 above is applied herein for the dependent portion of the claim. Uchida further disclose that the size of the ceramic particles and the thickness of the bed of ceramic particles (14) can be varied to control pressure loss and mobility of the ceramic particles (see Machine translation, parags. [0004]). Uchida is, however, silent with respect to the specific size of the ceramic particles. The recited limitation with respect to the specific size of the ceramic particles in claim 8 is not a patentable distinction over the prior art, because it would have been obvious to one having ordinary skill in the art at the time the invention was made to select a size in the range as claimed through a mere routine experimentation and optimization based on the teachings of Uchida. See MPEP 2144.05.

5. Claims 3, 6, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (JP 11-190591) and Nobuhara et al. (JP 01-282148) as applied to claim 2 above, and further in view of Dunn, Jr. (3,699,206).

Regarding claims 3, 6, and 10 the reasoning applied to claim 2 above is applied herein for the dependent portion of the claims to claim 2. Uchida is silent with respect to providing an anticorrosive material for chlorine gas. Nobuhara et al. disclose a fused silica material for use as a refractory material in a chlorination furnace. Dunn, Jr. discloses a process and apparatus for the production of titanium dioxide (see Abstract).

Dunn, Jr. teaches that the reactor for the production of the metal chloride can be composed of corrosion-resistant materials such as quartz or a ceramic that are capable of withstanding contact with chlorine at temperatures in excess of 1,250°C (see col. 2, lines 17-23 and col. 3, lines 2-5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to similarly utilize the ceramic material disclose in the reference Nobuhara et al. or Dunn, Jr. as the anticorrosive material along the inner wall of the reactor of Uchida in the manner as claimed, because as evidenced by the reference Dunn, Jr. it is known in the art to provide anticorrosive material composed of ceramic material along the inner wall of a reactor used in the production of metal chloride (see col. 3, lines 2-5).

Regarding claim 12, the claim depends from claim 3 such that the reasoning applied to claim 3 above is applied herein for the dependent portion of the claim. The references Uchida and Dunn, Jr. fail to disclose the specific purity and porosity of the ceramic material for use as an anticorrosive material for covering the inner wall of the distributor section of a chlorination furnace. Nobuhara et al., as previously mentioned, disclose a ceramic material comprising  $\geq 99.0\%$   $\text{SiO}_2$  and porosity of  $\leq 5\%$  for use as a refractory material in a chlorination furnace (see Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the ceramic material disclosed in Nobuhara et al. as the ceramic material in the apparatus of Uchida and/or Dunn, Jr., because Nobuhara et al. teach that the ceramic material made in accordance to their invention helps prolong the service life of a chlorine furnace (see Abstract).

6. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (JP 11-190591), Nobuhara et al. (JP 01-282148) and Dunn, Jr. (3,699,206) as applied to claim 3 above, and further in view of Nelson et al. (US 3,067,005).

Regarding claims 4 and 5, the claims depend from claim 3 such that the reasoning applied to claim 3 above is applied herein for the dependent portions of the claims to claim 3. The references Uchida, Nobuhara et al., and Dunn, Jr. fail to disclose the specific configuration in which the anticorrosive material is laid along the inner wall of the reaction vessel. However, the recited limitations in claims 4 and 5 are not patentable distinctions over the prior art, because, as evidenced by the reference Nelson et al. (see Fig. 2), it is known in the art to provide anticorrosive material such as those suggested by Dunn, Jr. in configuration as recited in claims 4 and 5.

### ***Response to Arguments***

7. Applicant's arguments filed on February 23, 2009 have been fully considered but they are not persuasive.

Applicants' evidence of unexpected result (see Remarks pages 8 and 9) is not persuasive. The result obtained by the Applicants is predictable from following the teaching and suggestion of the reference Nobuhara et al. The reference Nobuhara et al. teaches that the service life of a chlorination furnace can be prolonged by utilizing a ceramic material having a purity  $\geq 99.0\%$  and a porosity of  $\leq 5\%$  (see Abstract). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to reasonably expect that further increasing the purity and

reducing the porosity of ceramic materials used in a chlorination furnace would have resulted in an increase in the service life of the chlorination furnace, as recognized by the Applicants.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. King (US 4,083,928) discloses an apparatus for the production of a metal chloride.
9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lessanework Seifu whose telephone number is (571)270-3153. The examiner can normally be reached on Mon-Thr 7:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. S./  
Examiner, Art Unit 1797

/Walter D. Griffin/  
Supervisory Patent Examiner, Art Unit 1797